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SPEC.
APPROVED
12-6-04

[10901/36]

**REFLECTION-TYPE GRADUATION AND METHOD FOR
MANUFACTURING A REFLECTION-TYPE GRADUATION**Field of the Invention

The present invention is directed to a reflection-type graduation, as well as to a method for manufacturing a reflection-type graduation.

Related Technology

5 Reflected-light position encoders usually include a reflection-type graduation, as well as a scanning device that is movable relative to the reflection-type graduation. A light source is typically mounted at the scanning device that emits a light beam in the direction of the reflection-type graduation. From the reflection-type graduation, the light packet is reflected back toward the scanning device, where it is modulated—dependent upon displacement—to

10 pass through one or more graduated-scale scanning structures, and is ultimately measured by a sensing array. The signals generated in this manner, and modulated in dependence upon displacement, are then further processed by a downstream evaluation unit.

 Reflection-type graduations are typically made of a substrate material, upon which

15 subsections having different optical properties are placed in alternating sequence. In the case of an incremental graduation, the array of the various subsections extends in the direction of measurement. It can be provided, for example, to produce subsections of high and low reflectivity on a glass substrate. As a substrate material, steel is also used, on which subsections having high and low reflectivity are formed. In this connection, the subsections

20 of high reflectivity can be made of gold. The steel surface is etched to have a frosted texture for the subsections of lower reflectivity, so that the incident light is absorbed or reflected diffusely.

 A number of requirements are placed on material measuring standards of this kind.

25 These include a greatest possible abrasion resistance, a high thermal resistance, defined thermal properties, as well as good long-term stability. However, the above-mentioned, known material measuring standards on glass and steel substrates only partially meet these requirements.